

< WORKSHEET

Physics

ATTEMPTED MCQS 0/23



1) The resistance of a 60 watt bulb in a 120 volt line is:

- A) $240\ \Omega$ C) $60\ \Omega$
B) $220\ \Omega$ D) $200\ \Omega$

☐ A ☐ B ☐ C ☐ D

2) Internal resistance of the cell is caused due to the:

- A) Static charges C) Electrolyte
B) Electrodes D) None of these

☐ A ☐ B ☐ C ☐ D

3) A voltmeter directly connected across a battery in a circuit where current is flowing, will measure:

- A) Emf
B) Terminal potential difference
C) Internal resistance
D) None of these

☐ A ☐ B ☐ C ☐ D

4) Value of current for ideal short circuit is:

- A) Zero C) Both are possible
B) Infinity D) Non-zero but finite

☐ A ☐ B ☐ C ☐ D

5) Value of current is _____ for open circuit.

- A) Zero C) Either A or B
B) Infinity D) Non-zero but finite

☐ A ☐ B ☐ C ☐ D

6) For close circuit (with load applied across battery), the emf E of battery is related with terminal potential difference V_t as:

- A) $E > V_t$ C) $E = V_t$
B) $E < V_t$ D) All of these

☐ A ☐ B ☐ C ☐ D

7) Kirchhoff's 1st rule is in accordance with law of conservation of:

- A) Energy
B) Momentum
C) Mass
D) Charge

☐ A ☐ B ☐ C ☐ D

8) When the battery is being charged, then emf E and terminal Potential difference V_t are related as:

- A) $E > V_t$
B) $E < V_t$
C) $E = V_t$
D) Any of these

☐ A ☐ B ☐ C ☐ D

9) The potential difference between the terminals of a battery in open circuit is 2.2 V. When it is connected across a resistance of $5\ \Omega$, the potential falls to 1.8 V. The current drawn from battery is:

- A) 0.46 A
B) 0.54 A
C) 0.26 A
D) 0.36 A

☐ A ☐ B ☐ C ☐ D

10) Referring to Q .9, the internal resistance of battery is:

- A) $3.1\ \Omega$
B) $2.1\ \Omega$
C) $1.1\ \Omega$
D) $0.51\ \Omega$

☐ A ☐ B ☐ C ☐ D

11) In the rules for finding the potential changes, if a resistor is traversed in the direction of current, the change in potential is:

- A) Zero
B) Negative
C) Positive
D) Any of these

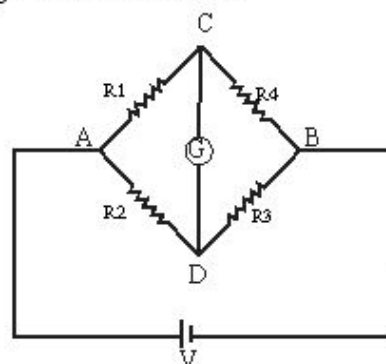
☐ A ☐ B ☐ C ☐ D

12) Kirchhoff's 2nd rule is based on:

- A) Energy conservation
B) Mass conservation
C) Charge conservation
D) Momentum conservation

☐ A ☐ B ☐ C ☐ D

13) In the bridge shown below:



The final expression of balanced bridge is:

- A) $\frac{R_1}{R_2} = \frac{R_3}{R_4}$
B) $\frac{R_1}{R_3} = \frac{R_4}{R_2}$
C) $\frac{R_2}{R_4} = \frac{R_1}{R_3}$
D) $\frac{R_1}{R_4} = \frac{R_2}{R_3}$

☐ A ☐ B ☐ C ☐ D

14) In the bridge circuit shown in Q.13, if $R_1=R$, $R_2=R$, $R_3=2R$ and $R_4=2R$, then the effective Resistance between A and B is:

A) $\frac{5R}{2}$

C) $\frac{3R}{2}$

B) $\frac{7R}{2}$

D) $\frac{4R}{3}$

☐ A ☐ B ☐ C ☐ D

15) Referring to the values of resistances in Q.14, the effective resistance between C and D is:

A) $\frac{5R}{2}$

C) $\frac{3R}{2}$

B) $\frac{7R}{2}$

D) $\frac{4R}{3}$

☐ A ☐ B ☐ C ☐ D

16) Referring to the Q.14, the net current through Galvanometer is:

A) Zero

C) Half of maximum

B) Maximum

D) Can't be predicted

☐ A ☐ B ☐ C ☐ D

17) Wheatstone bridge is based on Kirchhoff _____.

A) 1st

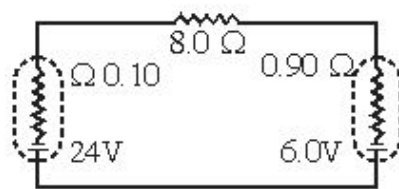
C) 3rd

B) 2nd

D) 4th

☐ A ☐ B ☐ C ☐ D

18) Calculate terminal potential difference of 24 V cell in circuit:



A) 24.2 V

C) 24 V

B) 23.8 V

D) 22.6 V

☐ A ☐ B ☐ C ☐ D

19) Referring to Q.18, Calculate terminal potential difference of 6 V cell in circuit:

A) 4.2 V

C) 7.8 V

B) 5.5 V

D) 6 V

☐ A ☐ B ☐ C ☐ D

20) To compare two emfs in potentiometer, we use:

A) $\frac{E_1}{E_2} = \frac{\ell_2}{\ell_1}$

C) $\frac{E_1}{E_2} = \frac{r_2}{r_1}$

B) $\frac{E_1}{E_2} = \frac{\ell_1}{\ell_2}$

D) $\frac{E_1}{E_2} = \frac{\ell_1 \ell_2}{\ell_1 + \ell_2}$

☐ A ☐ B ☐ C ☐ D

21) If cost/KWh is Rs.2, then cost of operating two 100 watt fans for 10 hours is:

A) Rs.4

C) Rs.6

B) Rs.2

D) Rs.1

☐ A ☐ B ☐ C ☐ D

22) If three bulbs of 50W, 100 W and 200 W are connected in series across 220 V mains, then which bulb will show maximum glow?

- A) 50 W
B) 100 W
C) 200 W
D) All will glow equally

☐ A ☐ B ☐ C ☐ D

23) Three bulb of 40 watt, 200 watt and 100 watt are connected in parallel, which bulb will provide maximum brightness:

- A) 40 watt
B) 100 watt
C) 200 watt
D) All will have same brightness

☐ A ☐ B ☐ C ☐ D



< WORKSHEET

Physics

ATTEMPTED MCQS 23/23



1) The resistance of a 60 watt bulb in a 120 volt line is:

- A) 240 Ω C) 60 Ω
B) 220 Ω D) 200 Ω

A ☒ B ☐ C ☐ D ☐

Your answer is correct

Answer is “A”

Solution:- Use relation:- $P = \frac{V^2}{R}$

2) Internal resistance of the cell is caused due to the:

- A) Static charges C) Electrolyte
B) Electrodes D) None of these

A ☐ B ☐ C ☐ D ☐

Your answer is incorrect

Answer is “C”

Solution:- Internal resistance is the hindrance which charge carriers feel while passing through electrolyte inside the battery.

3) A voltmeter directly connected across a battery in a circuit where current is flowing, will measure:

- A) Emf
B) Terminal potential difference
C) Internal resistance
D) None of these

A ☐ B ☐ C ☐ D ☐

Your answer is incorrect

Answer is “B”

Solution:- When current is flowing through circuit, the voltmeter measures terminal potential difference. When current is not flowing, voltmeter reads emf.

4) Value of current for ideal short circuit is:

- A) Zero
B) Infinity
C) Both are possible
D) Non-zero but finite

A ☐ B ☐ C ☐ D

Your answer is incorrect

Answer is “B”

Solution:- For short circuit

$$R = 0 \Rightarrow I = \infty$$

5) Value of current is _____ for open circuit.

- A) Zero
B) Infinity
C) Either A or B
D) Non-zero but finite

A ☐ B ☐ C ☐ D

Your answer is correct

Answer is “A”

Solution:- For open circuit

$$I = 0 \Rightarrow R = \infty$$

6) For close circuit (with load applied across battery), the emf E of battery is related with terminal potential difference V_t as:

- A) $E > V_t$
B) $E < V_t$
C) $E = V_t$
D) All of these

A ☐ B ☐ C ☐ D

Your answer is correct

Answer is “A”

Solution:- When battery is being discharged: $E = V_t + Ir$

7) Kirchhoff's 1st rule is in accordance with law of conservation of:

- A) Energy
B) Momentum
C) Mass
D) Charge

A ☐ B ☐ C ☐ D

Your answer is incorrect

Answer is “D”

Solution:- Kirchhoff's first rule is another statement of law of conservation of charge.

- 8) When the battery is being charged, then emf E and terminal Potential difference V_t are related as:**

- A) $E > V_t$ C) $E = V_t$
B) $E < V_t$ D) Any of these

A ☐ B ☐ C ☐ D

Your answer is incorrect

Answer is “B”

Solution:- When battery is being charged then

$$E = V_t - Ir$$

- 9) The potential difference between the terminals of a battery in open circuit is 2.2 V. When it is connected across a resistance of $5\ \Omega$, the potential falls to 1.8 V. The current drawn from battery is:**

- A) 0.46 A C) 0.26 A
B) 0.54 A D) 0.36 A

A ☐ B ☐ C ☐ D

Your answer is incorrect

Answer is “D”

Solution:- $V_t = IR \Rightarrow I = \frac{V_t}{R} = \frac{1.8}{5}$

- 10) Referring to Q .9, the internal resistance of battery is:**

- A) $3.1\ \Omega$ C) $1.1\ \Omega$
B) $2.1\ \Omega$ D) $0.51\ \Omega$

A ☐ B ☐ C ☐ D

Your answer is incorrect

Answer is “C”

Solution:- $E = V_t + Ir$

11) In the rules for finding the potential changes, if a resistor is traversed in the direction of current, the change in potential is:

- A) Zero
B) Negative
C) Positive
D) Any of these

A ☐ B ☐ C ☐ D

Your answer is incorrect

Answer is “B”

Solution:- Read rules for finding potential changes at the end of 2nd Kirchhoff's rules.

12) Kirchhoff's 2nd rule is based on:

- A) Energy conservation
B) Mass conservation
C) Charge conservation
D) Momentum conservation

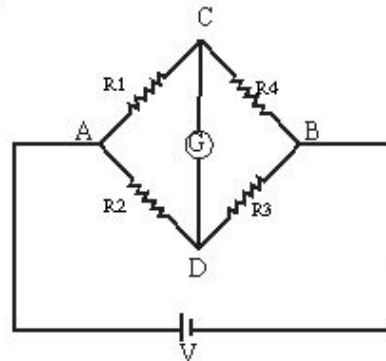
A ☐ B ☐ C ☐ D

Your answer is correct

Answer is “A”

Solution:- Kirchhoff's 2nd rule is based on law of conservation of energy.

13) In the bridge shown below:



The final expression of balanced bridge is:

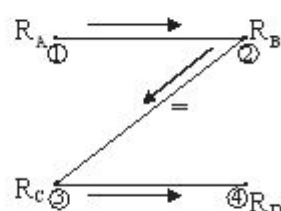
- A) $\frac{R_1}{R_2} = \frac{R_3}{R_4}$
B) $\frac{R_1}{R_3} = \frac{R_4}{R_2}$
C) $\frac{R_2}{R_4} = \frac{R_1}{R_3}$
D) $\frac{R_1}{R_4} = \frac{R_2}{R_3}$

A ☐ B ☐ C ☐ D

Your answer is incorrect

Answer is “D”

Solution:- Trick:



$$\frac{R_A}{R_B} = \frac{R_C}{R_D}$$

- 14) In the bridge circuit shown in Q.13, if $R_1=R$, $R_2=R$, $R_3=2R$ and $R_4=2R$, then the effective Resistance between A and B is:

- A) $\frac{5R}{2}$ C) $\frac{3R}{2}$
 B) $\frac{7R}{2}$ D) $\frac{4R}{3}$

A ☐ B ☐ C ☐ D

Your answer is incorrect

Answer is “C”

Solution:- Ignore Galvanometer while finding Equivalent resistance.

- 15) Referring to the values of resistances in Q.14, the effective resistance between C and D is:

- A) $\frac{5R}{2}$ C) $\frac{3R}{2}$
 B) $\frac{7R}{2}$ D) $\frac{4R}{3}$

A ☐ B ☐ C ☐ D

Your answer is incorrect

Answer is “D”

Solution:- Ignore Galvanometer while finding Equivalent resistance.

- 16) Referring to the Q.14, the net current through Galvanometer is:

- A) Zero C) Half of maximum
 B) Maximum D) Can't be predicted

A ☐ B ☐ C ☐ D

Your answer is correct

Answer is “A”

Solution:- For balanced Bridge; $I_g=0$

- 17) Wheatstone bridge is based on Kirchhoff _____.

- A) 1st C) 3rd
 B) 2nd D) 4th

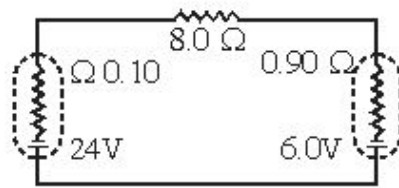
A ☐ B ☐ C ☐ D

Your answer is incorrect

Answer is “B”

Solution:-

- 18) Calculate terminal potential difference of 24 V cell in circuit:**



- A) 24.2 V C) 24 V
B) 23.8 V D) 22.6 V
A ☐ B ☐ C ☐ D

Your answer is incorrect

Answer is “B”

Solution:-

Step-I

Find net current through circuit

$$I = I_{\text{net}} = \frac{V_{\text{net}}}{R_{\text{e}}} = \frac{24 - 6}{0.1 + 8 + 0.9} = 2 \text{ A}$$

Step-II

$$E = V_t + Ir$$

$$V_t = E - I_{\text{net}}r$$

$$V_t = 24 - (2)(0.1) = 23.8 \text{ V}$$

- 19) Referring to Q.18, Calculate terminal potential difference of 6 V cell in circuit:**

- A) 4.2 V C) 7.8 V
B) 5.5 V D) 6 V
A ☐ B ☐ C ☐ D

Your answer is incorrect

Answer is “C”

Solution:-

Step-I

Finding net current through circuit

$$I = I_{\text{net}} = \frac{V_{\text{net}}}{R_{\text{e}}} = \frac{24 - 6}{0.1 + 8 + 0.9} = 2 \text{ A}$$

Step-II

When two batteries of different voltages are connected such that their high potential terminals or low potential terminals are combined, then smaller battery gets charged & for smaller battery;

$$E = V_t - Ir$$

$$V_t = E + Ir$$

$$V_t = 6 + (2)(0.9)$$

$$V_t = 7.8 \text{ V}$$

20) To compare two emfs in potentiometer, we use:

A) $\frac{E_1}{E_2} = \frac{\ell_2}{\ell_1}$

C) $\frac{E_1}{E_2} = \frac{r_2}{r_1}$

B) $\frac{E_1}{E_2} = \frac{\ell_1}{\ell_2}$

D) $\frac{E_1}{E_2} = \frac{\ell_1 \ell_2}{\ell_1 + \ell_2}$

A ☐ B ☐ C ☐ D

Your answer is incorrect

Answer is “B”

Solution:-

To compare two emf we use:

$$\frac{E_1}{E_2} = \frac{\ell_1}{\ell_2}$$

21) If cost/KWh is Rs.2, then cost of operating two 100 watt fans for 10 hours is:

A) Rs.4

C) Rs.6

B) Rs.2

D) Rs.1

A ☐ B ☐ C ☐ D

Your answer is correct

Answer is “A”

Solution:-

- i. Energy consumed by fans = (no. of fans)(Pt)
- ii. Total cost = (Cost/kWh)(Energy consumed in kWh)

22) If three bulbs of 50W, 100 W and 200 W are connected in series across 220 V mains, then which bulb will show maximum glow?

A) 50 W

C) 200 W

B) 100 W

D) All will glow equally

A ☐ B ☐ C ☐ D

Your answer is correct

Answer is “A”

Solution:- In series the lamp with smaller rated power shows maximum glow.

- 23)** Three bulb of 40 watt, 200 watt and 100 watt are connected in parallel, which bulb will provide maximum brightness:
- A) 40 watt
 - B) 100 watt
 - C) 200 watt
 - D) All will have same brightness

A ☐ B ☐ C ☐ D

Your answer is incorrect

Answer is “C”

Solution:- In parallel combination the bulb with maximum rated power gives maximum brightness

